



347288

MEMORANDUM

DATE: August 25, 2008

TO: Division File

FROM: Lance Range

SUBJECT: Chemetco

SITE NUMBER: 1198010003 – Madison County
Hartford/Chemetco

A desktop Geographic Information System (GIS) was used to aid in locational and dimensional analysis of the Chemetco site. Specifically, GIS was used to evaluate dimensions of the site and site sources, as contaminated soils and sediments. GIS was also used to compare distances from the site to human populations, existing drinking water wells and wetlands. Sample locations from previous investigations were identified using Illinois EPA's Trimble Pro XR Global Positioning System (GPS).

Dimensional of Site and Sources

GPS data from soil and sediment sampling locations along with metal concentrations results were overlain on aerial photographs and georeferenced topographical maps using the computer program ArcGIS produced by ESRI. Sources used for the aerial photographs and georeferenced topographical maps are as follows, respectively:

1. United States Geological Survey. Digital Orthophoto quarter Quadrangle, Madison County, southwest quarter of Wood River quadrangle. In: Illinois Natural Resources Geospatial Data Clearinghouse at <http://www.isgs.uiuc.edu/nsdihome/webdocs/doq05/county/madison.html>. 2005
2. United States Geological Survey. Digital Raster Graphic, Madison County, Wood River quadrangle. In: Illinois Natural Resources Geospatial Data Clearinghouse at <http://www.isgs.uiuc.edu/nsdihome/ISGSindex.html>. 1993

A script was used within ArcGIS on an aerial photograph to calculate the area (in square meters) of the drainage area (slag piles) and the portion of Long Lake that is impacted. The site is approximately 41.1 acres in size.

Water Well Analysis

Illinois EPA utilized an internal Oracle database maintained by the Illinois State Geological Survey (ISGS) in order to determine the location of drinking water wells in comparison to the site. The ISGS maintains a database of private, community, and non-community drinking water wells throughout the state. The data are associated with geographic coordinates and were overlain on an aerial photo and topographical map. The

ArcGIS program was used to identify the number of wells within certain distance categories ranging from 0.25 miles up to 4 miles from the site.

Wetlands Analysis

The National Wetlands Inventory Map for the lower 48 states produced by the United States Fish and Wildlife was brought into ArcGIS for analysis. The U.S. FW provided a georectified scan of the National Inventory map which was reviewed for areas surrounding the Chemetco site and following the 15-mile TDL for the surface water pathway. GIS was used to determine the length of various types of wetlands frontage that were adjacent to the unnamed tributary and Long Lake. A total of 4.95 miles of wetlands frontage was identified within the PPE and X206(U.S. FW).

References

1. ESRI. ESRI Data & Maps 2002, An ESRI White Paper. Electronic Report at <http://support.esri.com/index.cfm?fa=knowledgebase.whitepapers.viewPaper&PID=16&MetalD=1292>. Accessed December 2007.
2. U.S. Fish and Wildlife Service. CONUS wet poly. Geospatial Vector Digital Data. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington D.C. FWS OBS-79/31. July 2007. At http://wetlandswms.er.usgs.gov/wmsconnector/com.esri.wms.Esrimap?ServiceName=USFWS_WMS_CONUS_Wetlands&. Accessed August 11, 2008.